

**Work Order ID 78331**

January-05-12 10:40:03 AM

**\*78331\***

Page 1

Item ID: D4148-1

Accept

**\*N9000040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Crosstube Lug Plate, Fwd

Start Date: 05/01/2012 Start Qty: 30.00

**\*30\***

Cust Item ID:

Required Date: 12/01/2012 Req'd Qty: 30.00

**\*30\***

Customer:

Reference:

Approvals: Process Plan: M.C.J.Date: 12/01/05

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start **\*NR1\***Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D4148

D

PB →

100

0.00

**\*100\***

Waterjet

Memo

0.00

FLOW CNC Waterjet

Cut as per dwg D4148

Prog Rev: BDwg Rev: D

Deburr as required

B12-1-9

(31)

110

QC2- Inspect parts off machine FAI/FAIB

0.00

**\*110\***

QC

Memo

0.00

Quality Control

B12-1-9

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
12/14/09	# 10	change Part Rev to Rev D.	DA	12/1/10 (in progress)	-	W	5 12/14/09

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 78331

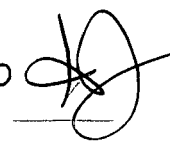
**\*78331\***

Page 2

January-05-12 10:40:03 AM

Item ID: D4148-1 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Crosstube Lug Plate, Fwd  
 Start Date: 05/01/2012 Start Qty: 30.00 **\*30\*** Cust Item ID:  
 Required Date: 12/01/2012 Req'd Qty: 30.00 **\*30\*** Customer:  
 Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 <b>*120*</b> QC Quality Control	QC8- Inspect parts - second check  Memo	0.00  0.00				count (431)			
150 <b>*150*</b> Packaging Packaging	Identify as per dwg & Stock Location: <u>132</u>  Memo	0.00  0.00							12/1/10 (31)
160 <b>*160*</b> QC Quality Control	QC21- Final Inspection - Work Order Release  Memo	0.00  0.00							12/1/10  ME 12-01-10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

# Picklist Print

January-05-12 10:40:07 AM

Page 1

Work Order ID: 78331

**\*78331\***

Parent Item: D4148-1

**\*D4148-1\***

Parent Item Name: Crosstube Lug Plate, Fwd

Start Date: 05/01/2012

Required Date: 12/01/2012

Start Qty: 30.00

Required Qty: 30.00

**Comments:**

IPP Rev:A 10.06.24 new issue DD verf:EC

IPP Rev:B 10.10.29 as per revC DD verf:EC

11.03.02 AS PER DWG REV.D DD VERF:EC

IPP REV:C

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

M304S11GA

Purchased

No

100

sf

31.1000

0.3607

11.39053

11.5

**\*M304S11GA\***

304/316 0.125 Sheet

\*\*

B 12-1-9

Location

Loc Qty

Loc Code

MAT020

31.1

119006

8.7

119048

22.4

119048

31

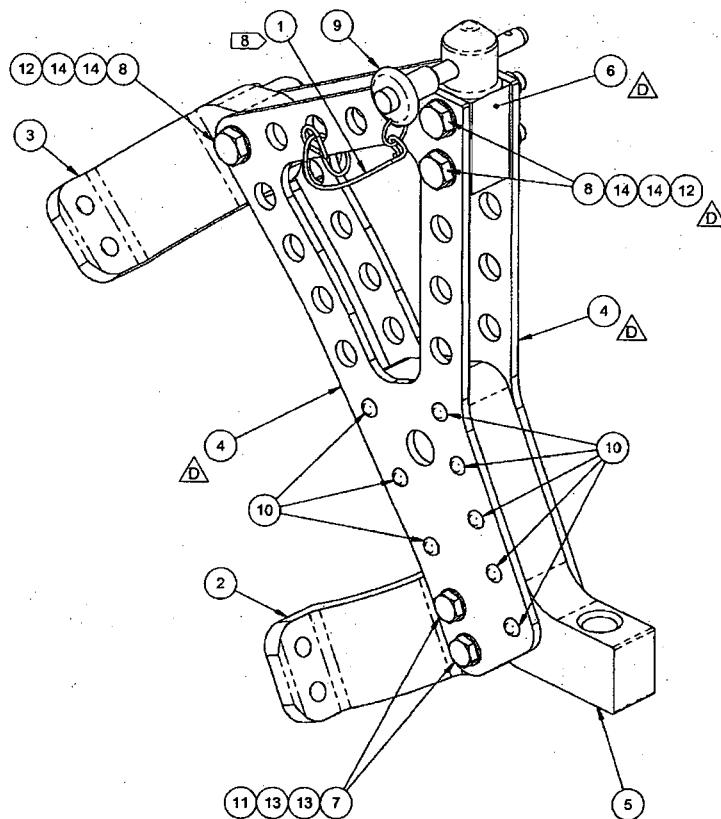
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**D4148-041 FWD X-TUBE LUG ASSY**

**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4148-041" PER DART QSI 044 6.1
- 7) WEIGHT: 3.67 lbs
- 8) ATTACH D2690-6 TO D4148-1 BY LOOPING AROUND A LIGHTENING HOLE FIRST AND THEN SECURE TO MS17984-C413

ITEM	QTY -041	P/N	DESCRIPTION
	X	D4148-041	FWD X-TUBE LUG ASSY
1	1	D2690-6	LANYARD
2	1	D3910-1	X-TUBE LUG
3	1	D4091-1	MOUNTING LUG
4	2	D4148-1	FWD X-TUBE LUG PLATE
5	1	D4148-3	STUD RECEIVER LOWER
6	1	D4148-5	EYEBOLT STUD
7	2	AN3C12A	BOLT
8	3	AN4C13A	BOLT
9	1	MS17984-C413	PIP PIN
10	8	MS20615-4M18	RIVET
11	2	MS21043C3	NUT
12	3	MS21043C4	NUT
13	4	NAS1149C0332R	WASHER
14	6	NAS1149C0432R	WASHER

UNCLASSIFIED  
SUBJECT TO REVIEW

W. J. J. J. J.  
V. J. J. J. J.

NO. ~~788~~ 78331  
M.C.J.  
12/01/05

**RELEASED**  
R 2011-02-24

D	HOLE DIA CHANGED TO 0.262" (D8-3); HOLE DIA CHANGED TO 0.260" (C8-3); REPLACED QTY(2) AN3C12A, MS21043C3 AND QTY(4) NAS1149C0332R WITH QTY(2) AN4C13A, MS21043C4 AND QTY(4) NAS1149C0432R (D3-1, C4-2)	SC	11.02.22
C	REDESIGNED D4148-1/3 TO ADDRESS COMPATIBILITY ISSUES WITH D350-591 SHORT STEPS	MB	10.10.12
B	REPLACED QTY(3) MS20615-4M18 WITH QTY(2) EACH AN3C12A, MS21043-3 AND QTY(4) NAS1149C0332R WASHER (ZN D3-1, B7-2 & B4-2); MS20615-4M18 WAS MS20615-4M20 (ZN D3-1 & B7-2); Ø0.129 3 PL REPLACES Ø0.129 3 PL (ZN D8-3); Ø0.129 7 PL WAS 10 PL (ZN A7-3); Ø0.191 WAS Ø.129 (ZN C8-3). REASON: SEE TR-D350-607-2 REV. B.	MB	10.07.05
A	NEW ISSUE	MB	10.08.18
REV.	DESCRIPTION	BY	DATE
DESIGN	MB		
DRAWN	SC		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	11.02.22		

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. **D4148** REV. D  
SHEET 1 OF 5

TITLE **FWD X-TUBE LUG ASSY** SCALE NTS

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**D4148-1 FWD X-TUBE LUG PLATE**

The drawing consists of three main views: a front view (left), a side view (middle), and an end view (right). The front view shows a complex shape with multiple holes and dimensions. Key dimensions include overall width 3.57, height 8.096, and various hole diameters like Ø0.38, Ø0.257, Ø0.50, Ø0.129, and Ø0.191. Pitch values such as 0.82 PITCH, 0.77 PITCH, 0.92 PITCH, and 0.750 PITCH are also indicated. The side view shows a thickness of 0.125 REF. The end view shows a profile with angles of 60°, 77°, 35°, 110°, 10°, 75°, and 25°, along with radii R6.0, R1.00, and R0.38 TYP.

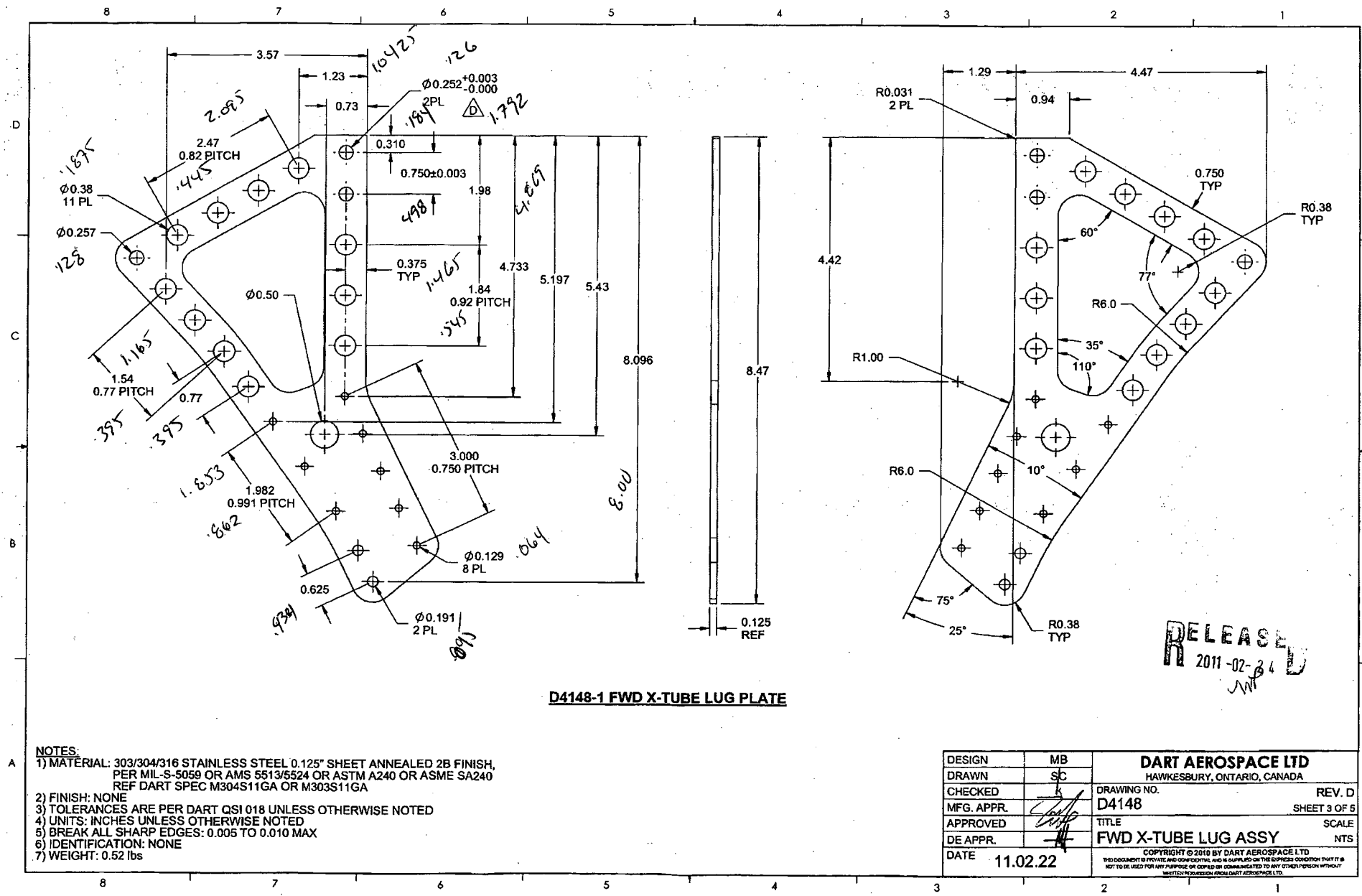
**NOTES:**

- MATERIAL: 303/304/316 STAINLESS STEEL 0.125" SHEET ANNEALED 2B FINISH, PER MIL-S-5059 OR AMS 5513/5524 OR ASTM A240 OR ASME SA240 REF DART SPEC M304S11GA OR M303S11GA
- FINISH: NONE
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED
- BREAK ALL SHARP EDGES: 0.005 TO 0.010 MAX
- IDENTIFICATION: NONE
- WEIGHT: 0.52 lbs

**RELEASE**  
R 2011-02-24

DESIGN		MB	
DRAWN	SC	CHECKED	K
MFG. APPR.	[Signature]	APPROVED	[Signature]
DE APPR.	[Signature]	DATE	11.02.22

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D4148	REV. D SHEET 3 OF 5
TITLE FWD X-TUBE LUG ASSY	
SCALE NTS	
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**D4148-1 FWD X-TUBE LUG PLATE**

NOTES:

- 1) MATERIAL: 303/304/316 STAINLESS STEEL 0.125" SHEET ANNEALED 2B FINISH,  
PER MIL-S-5059 OR AMS 5513/5524 OR ASTM A240 OR ASME SA240  
REF DART SPEC M304S11GA OR M303S11GA
- 2) FINISH: NONE
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) THICKNESS: .125 INCHES UNLESS OTHERWISE NOTED
- 5) BREAK ALL SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.52 lbs

DESIGN	MB	<b>DART AEROSPACE LTD</b>	
DRAWN	SC	HAWKESSBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.	<i>[Signature]</i>	<b>D4148</b>	SHEET 3 OF 5
APPROVED		TITLE	SCALE
DE APPR.	<i>[Signature]</i>	<b>FWD X-TUBE LUG ASSY</b>	NTS
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RELEASE  
2011-02-24  
mtb

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

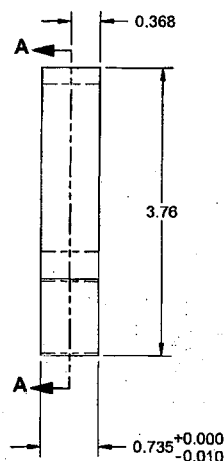
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

8                      7                      6                      5                      4                      3



RELEASED  
2011-02-24

1) MATERIAL: 303/304/316 STAINLESS STEEL BAR PER ASTM A582 OR ASTM A276  
REF DART SPEC M304B OR M303B

2) FINISH: NONE


3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

4) UNITS: INCHES UNLESS OTHERWISE NOTED

5) BREAK ALL SHARP EDGES: 0.005 TO 0.010 MAX

6) IDENTIFICATION: NONE

7) WEIGHT: 1.52 lbs

DESIGN	MB		<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	SC		DRAWING NO.	REV. D
CHECKED			<b>D4148</b>	SHEET 4 OF 4
MFG. APPR.			TITLE	SCALE
APPROVED			<b>FWD X-TUBE LUG ASSY</b>	MTS
DE APPR.			COPYRIGHT © 2010 BY DART AEROSPACE LTD <small>THIS DOCUMENT IS PRINTED AND RELEASED UNDER THE PATENT ACT OF CANADA. IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT</small>	
DATE	<b>11.02.22</b>			

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

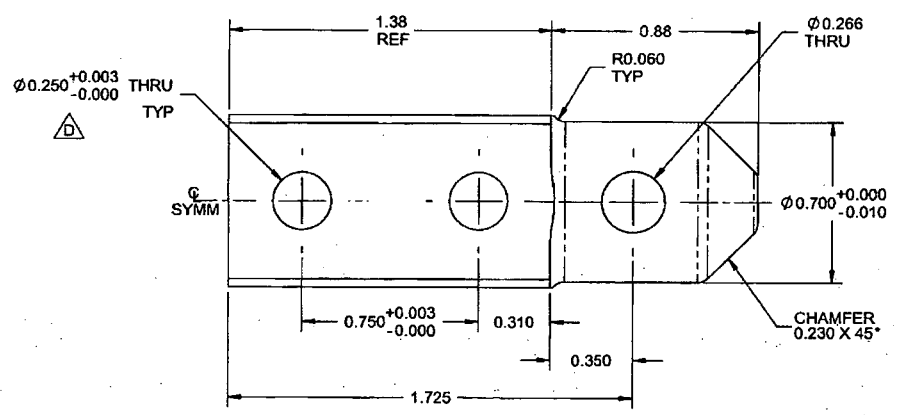
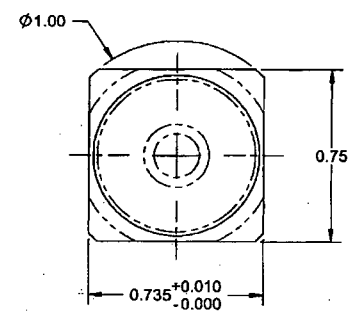
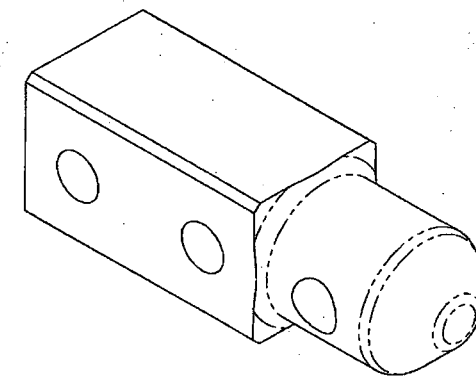
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

78331



**D4148-5 EYEBOLT STUD**

**RELEASED**  
2011-02-24  
JMD

- NOTES:**
- 1) MATERIAL: 303/304/316 STAINLESS STEEL BAR PER ASTM A582 OR ASTM A276  
REF DART SPEC M304B OR M303B
  - 2) FINISH: NONE
  - 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK ALL SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 0.27 lbs

DESIGN	MB	<b>DART AEROSPACE LTD</b>	
DRAWN	SC	HAWKESSBURY, ONTARIO, CANADA	
CHECKED	A	DRAWING NO.	REV. D
MFG. APPR.		<b>D4148</b>	SHEET 5 OF 5
APPROVED		TITLE	SCALE
DE APPR.		<b>FWD X-TUBE LUG ASSY</b>	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	
<b>Description: Fwd Crosstube Lug Plate</b>		<b>Part Number:</b>	<b>D4148-1</b>
<b>Inspection Dwg: D4148</b>	<b>Rev: C</b>		<b>Page 1 of 1</b>

**FIRST ARTICLE INSPECTION CHECKLIST**

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø0.129	+0.005/-0.001	.134	✓		✓ IB02	
Ø0.191	+0.005/-0.001	.193	✓		✓	
Ø0.38	+0.006/-0.001	.379	✓		✓	
Ø0.257	+0.006/-0.001	.259	✓		✓	
Ø0.50	+0.008/-0.001	.501	✓		✓	
0.94	+/-0.030	.944	✓		✓	
4.47	+/-0.030	4.480	✓		✓	
0.750	+/-0.010	.743	✓		✓	
8.47	+/-0.030	8.477	✓		✓ PROW 52	
8.096	+/-0.010	8.099	✓		✓	
5.43	+/-0.030	5.434	✓		✓	
5.197	+/-0.010	5.196	✓		✓	
4.733	+/-0.010	4.733	✓		✓	
0.310	+/-0.010	.312	✓		✓	
0.750	+/-0.010	.752	✓		✓	
0.375	+/-0.010	.376	✓		✓	
1.84	+/-0.030	1.838	✓		✓	
0.92	+/-0.030	.920	✓		✓	
3.000	+/-0.010	2.997	✓		✓	
0.750	+/-0.010	.754	✓		✓	
0.625	+/-0.010	.627	✓		✓	
1.982	+/-0.010	1.983	✓		✓	
0.991	+/-0.010	.991	✓		✓	
0.77	+/-0.030	.772	✓		✓	
1.54	+/-0.030	1.538	✓		✓	
2.47	+/-0.030	2.468	✓		✓	
0.82	+/-0.030	.822	✓		✓	
3.57	+/-0.030	3.572	✓		✓	
1.23	+/-0.030	1.231	✓		✓	
0.73	+/-0.030	.733	✓		✓	
0.125	+/-0.010	.117	✓		✓	

<b>Measured by:</b> IB	<b>Audited by:</b> S	<b>Preliminary Approval:</b>
<b>Date:</b> 12-1-9	<b>Date:</b> 12/01/09	<b>Date:</b>

Rev	Date	Change	Revised by	Approved
A	10.08.04	New Issue	KJ	
B	10.10.08	Dwg Rev updated	KJ	
C	10.11.05	Dimensions updated per Dwg Rev C	KJ	
D	11.03.08	Dwg Rev updated	KJ	